



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/692,389	10/23/2003	Nusrallah Jubran	3216.29US01	8485
24113	7590	01/06/2005	EXAMINER	
PATTERSON, THUENTE, SKAAR & CHRISTENSEN, P.A. 4800 IDS CENTER 80 SOUTH 8TH STREET MINNEAPOLIS, MN 55402-2100			DOTE, JANIS L	
			ART UNIT	PAPER NUMBER
			1756	

DATE MAILED: 01/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/692,389

Applicant(s)

JUBRAN ET AL

Examiner

Janis L. Dote

Art Unit

1756

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 29 November 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-22 is/are allowed.
- 6) ☒ Claim(s) 23-25 is/are rejected.
- 7) ☒ Claim(s) 26 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

Art Unit: 1756

1. The examiner acknowledges the amendments to claims 1, 4, 8, 11, 15, 18, 23, and 26, filed on Nov. 29, 2004. Claims 1-26 are pending.

2. Applicants' election of the invention of Group I, claims 1-14 and 23-26, in the reply filed on Nov. 29, 2004, is acknowledged. Because applicants did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

3. Claims 1-14 are directed to an allowable product for the reasons discussed in paragraph 12, infra. Pursuant to the procedures set forth in the Official Gazette notice dated March 26, 1996 (1184 O.G. 86), claims 15-22, which are directed to the process of using the patentable product, previously withdrawn from consideration as a result of a restriction requirement, have been hereby rejoined and fully examined for patentability under 37 CFR 1.104.

Since all claims previously withdrawn from consideration under 37 CFR 1.142 have been rejoined, the restriction requirement previously made in the Office action mailed on Oct. 28, 2004, has been hereby withdrawn.

Art Unit: 1756

4. The objection to the abstract set forth in the office action mailed on Oct. 28, 2004, paragraph 5, has been withdrawn in response to the amended abstract filed on Nov. 29, 2004.

The objection to the specification set forth in the office action mailed on Oct. 28, 2004, paragraph 6, has been withdrawn in response to the amended paragraphs beginning at page 10,, line 18, page 11, line 5, and page 12, line 18, of the specification, filed on Nov. 29, 2004.

The rejections of claims 1, 4, 8, 11, 23, and 26 under 35 U.S.C. 112, second paragraph, set forth in the office action mailed on Oct. 29, 2004, paragraph 9, have been withdrawn in response to the amendments to claims 1, 4, 8, 11, 23, and 26, filed on Nov. 29, 2004.

The rejection of claims 23 and 24 under 35 U.S.C. 102(b) over US 5,693,309 (Deutsch), as evidenced by CAPLUS abstract AN 1997:772242, DN 128:70000, describing US 5,693,309, which discloses the file registry number 121327-42-2, and Grant & Hackh's Chemical Dictionary, 5th edition, page 558, set forth in the office action mailed on Oct. 28, 2004, paragraph 13, has been withdrawn in response to the amendment to claim 23, amending claim 23 such that the "alkaryl group" is deleted from the Y group. As discussed in the rejection in paragraph 13, Deutsch discloses the compound 3,6-diaza-3,6,-bis(tert-

Art Unit: 1756

butoxycarbonylmethyl)-4-(4-oxiranylmethoxy)benzylsuberic acid bis(tert-butyl) ester. Col. 46, example 31. The compound meets the formula limitations recited in instant claim 23, except that the compound comprises the "alkaryl group,"  $-(C_6H_4)-CH_2-\overset{|}{CH}-CH_2-$ , as the Y group, which is outside the Y group limitations recited in instant claim 23.

5. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required:

(1) In instant claims 2, 9, 16, and 24, the recitation "X is a  $OCH_2$  group" lacks antecedent basis in the specification. The only disclosure is at page 20 of the specification, which shows two particular compounds where X is  $-OCH_2-$ . The recitations in claims 2, 9, and 24 are broader than the two particular disclosed compounds, where the R groups are respectively phenyl or tolyl groups, and Y is a 1,2,4-trisubstituted benzene, because they include compounds that are not the two particular disclosed compounds, such as compounds where the R groups are alkyl groups.

(2) In instant claims 3, 10, 17, and 25, the recitation "R1, R2, R3, and R4 are independently, an aryl group" lacks

Art Unit: 1756

antecedent basis in the specification. See page 20 of the specification, which shows two particular compounds where the R1, R2, R3, and R4 in one compound are all phenyl or in the other compound are all tolyl. The recitations in claims 3, 10, and 25 are broader than the two particular disclosed compounds, where the Y is a 1,2,4-trisubstituted benzene, because they include compounds that are not the two particular disclosed compounds, such as compounds where the Y group is a tri-substituted alkane group, and R1, R2, R3, and R4 are either phenyl or biphenyl.

Applicants' arguments filed on Nov. 29, 2004, have been fully considered but they are not persuasive.

Applicants assert that the amendment to the specification at page 4, filed on Nov. 29, 2004, overcomes the objections. However, page 4 of the specification was not amended in the amendments to the specification filed on Nov. 29, 2004. Accordingly, the objection stand.

6. The following is a quotation of the first paragraph of 35

U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Art Unit: 1756

7. Claims 23-25 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claims contain subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Instant claims 23-25 recite that the charge transport material having the formula recited in instant claim 23 comprises "only one epoxy group."

The originally filed specification does not provide an adequate written description of said charge transport material. The originally filed specification discloses a charge transport material of the generic formula disclosed at page 2, line 25 to page 3, line 11, page 8, lines 14-27, and page 19, line 25, to page 20, line 11. The originally filed specification discloses that the group E is an epoxy group. The instant specification at page 9, lines 5-7, discloses that the term "'group' indicates that the generically recited chemical moiety (e.g., alkyl . . . ) may have any substituent thereon which is consistent with the bond structure of that group. For example, when the term 'alkyl group' is used, that term would not only include unsubstituted

Art Unit: 1756

liner [sic], branched and cyclic alkyls, such as methyl, ethyl . . . but also substituents such as hydroxyethyl, cyanophenyl, 1,3,5-trimethoxyphenyl . . . and the like." Thus, the other groups in the formula, e.g.,  $R_1$  to  $R_4$ , Y, and X, can be substituted by any functional group. The originally filed specification does not exclude a charge transport material comprising more than one epoxy group. Nor does the originally filed specification disclose that the use a charge transport material comprising more than one epoxy group in an organophotoreceptor is detrimental to the organophotoreceptor. Moreover, there is no evidence on the present record to show that the inclusion of more than one epoxy group in the charge transport material is detrimental to the charge transport material. The only disclosure of charge transport compounds represented by the formula recited in instant claim 23 that comprise "only one epoxy group" is at page 20 of the specification, which shows two particular compounds. The formula recited in claims 23-25 is broader than the two particular disclosed compounds, where the R groups are respectively phenyl or tolyl groups, and Y is a 1,2,4-trisubstituted benzene, because it includes compounds that are not the two particular disclosed compounds, such as compounds where the R groups are alkyl groups. The two particular



Art Unit: 1756

disclosed species do not provide an adequate written description of the formula broadly recited in instant claims 23-25.

Applicants have not indicated where in the originally filed specification there is written support for the limitation "the charge transport material comprising only one epoxy group" recited in instant claim 23. Applicants can only exclude what they possessed. See In re Johnson, 194 USPQ 187 (CCPA 1977).

In this instance, the claimed limitation "comprising only one epoxy group" was not recognized in the specification as filed. Its use now introduces new concepts, and therefore violates the descriptive requirement of the first paragraph of 35 U.S.C. 112. See Ex parte Grasselli, 231 USPQ 393 (Bd. App. 1983).

8. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

9. Claims 23-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6,416,915 B1 (Kikuchi).

Kikuchi discloses the compound 27 at cols. 19-20. The compound 27 comprises two chain-polymerization groups  $-O-C(O)-CH=CH_2$  attached to the phenyl groups which are attached to the fluorene group. Kikuchi teaches that the chain-polymerization functional groups can equally be the chain-

Art Unit: 1756

polymerization functional group  $\text{-OCH}_2\text{-CH}(\text{O})\text{-CH}_2\text{-CH}_2\text{-}$ . Col. 6, lines 35-40, and compound 152 at cols. 53-54. Kikuchi also teaches that the chain-polymerization functional groups can be identical or different. Col. 3, lines 13-16 and 19-22; and compound 17 at cols. 15-16. Kikuchi discloses that said hole transporting compound comprising at least two chain polymerization functional groups, i.e., compounds 17, 27, or 152, forms a polymerizate. According to Kikuchi, when a surface layer in an electrophotographic photoreceptor comprises said polymerizate, the photoreceptor has high film strength leading to improved anti-abrasion and anti-scar characteristics. Col. 2, lines 52-56, and col. 3, lines 5-23.

It would have been obvious for a person having ordinary skill in the art, in view of the teachings of Kikuchi, to substitute one of the chain polymerization functional groups  $\text{-O-C(O)-CH=CH}_2$  in the Kikuchi compound 27 with the equivalent chain polymerization functional groups  $\text{-OCH}_2\text{-CH}(\text{O})\text{-CH}_2\text{-CH}_2\text{-}$  because that person would have had a reasonable expectation of successfully obtaining a hole transporting compound comprising at least two chain polymerization function groups that is capable of forming a polymerizate which when used in the surface of an electrophotographic photoreceptor improves the anti-abrasion and anti-scar characteristics of the photoreceptor.

Art Unit: 1756

The resulting hole transporting compound comprising at least two chain polymerization function groups that is rendered obvious over the teachings of Kikuchi meets the compositional limitations of the formula recited in instant claims 23-25. Said compound is represented by the formula recited in instant claim 23, when X is  $-OCH_2-$ , E is the epoxy group,  $-CH-\overset{\text{O}}{\text{CH}_2}-CH_2-$ , Y is the "aryl group," the di- $(C_6H_4)$ -substituted fluorene group, and the  $R_1$  and  $R_4$  groups are phenyl, and  $R_2$  and  $R_3$  groups are the "aryl group,"  $-C_6H_4-CH_2O-C(O)CH=CH_2$ . The instant specification at page 9, lines 5-7, discloses that the term "'group' indicates that the generically recited chemical moiety (e.g., alkyl, aryl . . .) may have any substituent thereon which is consistent with the bond structure of that group. For example, when the term 'alkyl group' is used, that term would not only include unsubstituted liner [sic], branched and cyclic alkyls, such as methyl, ethyl . . . but also substituents such as hydroxyethyl . . . and the like." Thus, the term "aryl" group appears to read on "aryl" groups substituted by any functional group.

Applicants' arguments filed on Nov. 29, 2004, have been fully considered but they are not persuasive.

Applicants assert that Kikuchi does not teach a compound as recited in instant claim 23, because instant claim 23 requires

Art Unit: 1756

that the compound have only one epoxy group and that Y cannot be an alkaryl group.

However, for the reasons discussed in the rejection above, Kikuchi does render a compound that meets the formula limitations recited in instant claim 23. As discussed in the rejection, Kikuchi teaches that the chain-polymerization functional groups can be different groups.

10. Claims 23 and 24 are rejected under 35 U.S.C. 102(b) as being anticipated by Itoh, T., et al., "Synthesis and Polymerization of 1-(2,4,6-tricyanophenylthio)-3-[3,5-bis(N,N-dimethylamino)phenoxy]-2-propyl Methacrylate; Polymer Effect on Intramolecular Charge-Transfer Interaction," Journal of Polymer Science: Part A: Polymer Chemistry (1995), Vol. 33, pp. 1475-1485 (Itoh).

Itoh discloses the compound 3-[3,5-bis(N,N-dimethylamino)phenoxy]-1,2-epoxypropane. Page 1478, col. 1, lines 30-50; and page 1483, compound 6. Compound 6 is within the compositional limitations of the formula recited in the instant claims. Compound 6 is represented by the formula recited in instant claim 23, when X is  $-OCH_2-$ , E is oxiranyl, Y is the trivalent "aryl group," 1,3,5-trisubstituted phenyl, and the R groups are each the "alkyl group," methyl.

11. Claims 23 and 24 are rejected under 35 U.S.C. 102(b) as being anticipated by US 5,364,614 (Platzek).

Platzek discloses the compound 1,3-(N,N'-tetrabenzyl)-diamino-2-(oxiranylmethoxy)propane. Col. 42, lines 39-53. Compound is within the compositional limitations of the formula recited in the instant claims. Said compound is represented by the formula recited in instant claim 23, when X is -OCH<sub>2</sub>-, E is oxiranyl, Y is the trivalent "alkyl group," 1,2,3-trisubstituted propane, and the R groups are each the "alkaryl group," benzyl.

12. Claims 1-22 are allowable over the prior art of record.

Claim 26 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The prior art of record does not teach or suggest an organophotoreceptor comprising the charge transport material as recited in the instant claims 1-22, or the compounds of claim 26 for the reasons discussed in the office action mailed on Oct. 28, 2004, paragraph 15, which are incorporated herein by reference, and for the reasons discussed infra.

Both Itoh and Platzek disclose a compound that meets the compositional limitations of the formula recited in instant claims 1, 2, 8, 9, 15, and 16. See paragraphs 10 and 11, supra. However, neither reference discloses or suggests that said compounds be used as charge transport compounds in an organophotoreceptor. Nor do the references teach or suggest the compounds recited instant claim 26.

Kikuchi renders obvious a compound that meets the compositional limitations of the formula recited in instant claims 1-3, 8-10, and 15-17. See paragraph 9, supra. However, as discussed in paragraph 9 above, Kikuchi discloses a surface layer comprising the polymerizate of said compound. Thus, the resulting polymerizate in the photoreceptor would not comprise the compound of the formula recited in the instant claims. Nor does Kikuchi teach or suggest the compounds recited in instant claim 26.

13. Applicants' amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicants are reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

Art Unit: 1756

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Janis L. Dote whose telephone number is (571) 272-1382. The examiner can normally be reached Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Mark Huff, can be reached on (571) 272-1385. The central fax phone number is (703) 872-9306.

Any inquiry regarding papers not received regarding this communication or earlier communications should be directed to Supervisory Application Examiner Ms. Claudia Sullivan, whose telephone number is (571) 272-1052.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JLD

Jan. 3, 2005

*Janis L. Dote*  
JANIS L. DOTE  
PRIMARY EXAMINER  
GROUP 1500-  
1700